

c) REMARKS

The claims are 1-9 with claims 1, 3 and 7-9 being independent. Claims 1-3 and 7-9 were amended to clarify their subject matter to resolve informalities unrelated to patentability.

It is requested that once allowable subject matter is found, that claims 7 and 8 be rejoined. For now, withdrawn claims 7 and 8 were amended to be consistent with the apparatus claims to facilitate rejoinder under MPEP §821.04.

Claims 1-6 and 9 were rejected under 35 U.S.C. §112 as being indefinite. Claims 1-3 and 7-9 have now been amended to clarify that the substrate acts as an electrode. As noted on specification page 5, lines 15-17; page 6, lines 8-10; page 7, lines 21-23 and page 25, lines 9-11, the substrate can act as a cathode-type electrode opposed from the power-supplying electrode. The objection should be withdrawn.

Claims 1-3 and 9 were rejected as anticipated by Niso, JP '399. Claims 4-6 were rejected as obvious over Niso, JP '399 in view of Tsubone; JPP '234 and Itoh '741. Niso is said to teach needlelike electrodes 1' which are adjusted to match the curvature of substrate 3. Tsubone is said to teach a means to press the power-applying electrode and a transportation mechanism. Itoh is said to teach a transportation mechanism. The grounds of rejection are respectfully traversed.

It will be demonstrated that Niso does not anticipate the present claimed invention and that the combination of Niso with Tsubone and Itoh does not render obvious the present claimed invention.

Initially, it is an important feature of the present invention that the surface shape of the power-applying electrode is in agreement with the curve or undulations of the substrate. This keeps the electrode-substrate distance substantially constant. When the distance between the power-applying electrode and opposed substrate is changed, however, unevenness in film formation rate is noted as well as disturbances of gas flow in the substrate width direction. See page 9, line 10 to page 10, line 5.

As shown in present Figs. 5, 7 and 8, where the distance between the power-applying electrode and substrate varies from a constant distance, then an unacceptable non-uniformity in film formation rate occurs. See page 18, line 8 to page 20, line 14. Where the electrode-substrate distance varies greater than 20%, film formation rate becomes quite non-uniform as seen in Fig. 7.

As shown in present Fig. 8, where an undulating substrate 101 is present, then if the power-applying electrode 801 has flat portions, there is a variation in distance between the flat substrate and undulating electrode, which, as shown in Fig. 7, can lead to unsatisfactory film formation.

The present invention meets this problem by providing a power-applying electrode with an undulation on its surface, which keeps the distance between the curvature of the substrate and undulating electrode to a desired value. The curved shape of the substrate is therefore correspondingly met by the surface of the power-applying electrode.

Niso JP '399 in Figs. 1-3 shows an electrode surface formed by a plurality of needlelike electrodes 1' on a flat plate electrode 30. As shown in Niso Figs. 2 and 3 on page 573, there are significant gaps between the individual electrodes 1'. These gaps terminate at electrode plate surface 30 which then opposes a corresponding portion of the

film surface 3. A very substantial number of separate gaps exist, since one gap exists between each pair of needlelike electrodes. The total surface area of plate electrode 30 exposed in these gaps is clearly significant as seen in Figs. 1-3 of Niso. Indeed, in Fig. 3 of Niso each gap is wider than the corresponding width of a needle electrode. The exposed plate electrode areas clearly do not undulate in agreement with the curvature of the substrate. Since the gap areas expose the flat plate electrode as in instant Fig. 8, they also promote problems in film formation as shown in instant Fig. 7.

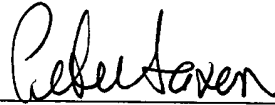
Niso, therefore, fails to teach that the distance between the curved substrate and undulating electrode is set at a desired value, since the exposed plate electrode does not undulate in correspondence with the film.

The defects of Niso are not remedied by Itoh or Tsubone. In Itoh, there is a permanent warp in a power-supply electrode and ground electrode to meet the shape of substrate 3 to cancel stress caused by the film forming on a substrate. There is no flexibility to change curvature of the power-applying electrode during film formation. In contrast, in the present invention, as shown in Figs. 3 and 4 the surface of the power-applying electrode can undulate to meet the changing curvature of the substrate.

Therefore, it is requested that the claims be allowed and the case passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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